INDUCTORS

6.1. Vocabulary

Ex. 1. *Match the words with their definitions.*

1. inductance measurement	a. the property of a coil that allows it to generate voltage in itself due to changes in its own current.
2. self-inductance	b. capable of being influenced or affected by a changing magnetic field.
3. induction	c. a device used to measure the inductance of electrical components or circuits.
4. mutual inductance	d. the ability of one coil to induce voltage in another nearby coil when the current changes.
5. total inductance	e. the overall measure of how much a circuit opposes changes in electric current, considering all components involved.
6. inductible	f. the act of determining how much a component can store energy in a magnetic field when current flows through it.
7. inductance meter	g. the process of generating an electric current in a conductor by changing the magnetic field around it.

Ex. 2. *Translate the sentences into English. Use the topic vocabulary.*

1. Мы узнаем об индукции, когда изучаем, как работают катушки индуктивности в цепях.

2. Взаимная индуктивность возникает, когда две катушки индуктивности влияют друг на друга в цепи.

3. Общая индуктивность — это сумма всех индуктивностей в цепи.

4. Измерение индуктивности помогает нам определить величину индуктивности катушки индуктивности.

5. Измеритель индуктивности — это инструмент, который показывает значение индуктивности катушки индуктивности.

6. Индуцируемый объект может создавать магнитное поле, если его поместить рядом с катушкой индуктивности.

7. Самоиндукция возникает, когда катушка индуктивности создает магнитное поле за счет собственного тока.

6.2. Word Formation

Ex. 1. *Change the form of the words to complete the sentences.*

1. … (induct) is an important property that affects how inductors function in circuits.

2. An … (induct) is used to store energy in a magnetic field when electricity flows through it.

3. … (induct) reasoning helps us make conclusions based on patterns and observations we notice.

4. The new component was … (insert) into the circuit board with great care to avoid damage.

5. … (insert) a resistor in the circuit can change the total resistance and affect performance.

6. … (store) of electrical energy in inductors is essential for many electronic devices we use daily.

7. Some energy can be made … (store) by using certain materials in the design of inductors.

6.3. Reading

Ex. 1. *Read the text.*

When it comes to physics, understanding the concept of induction is crucial. Induction occurs when a conductor is placed in a changing magnetic field, causing an electric current to flow. This process is vital in many applications, from transformers to electrical generators. One important aspect of induction is mutual inductance, which happens when two or more coils are placed close together. When the current in one coil changes, it induces a voltage in the other coil. This shared property can be combined to calculate the total inductance in a circuit.

To accurately study these effects, we rely on inductance measurement. Tools like the inductance meter are specialized for this purpose, allowing physicists and engineers to measure how well a circuit or component can induce voltage. Some materials are more inductible than others, which means they can be more readily influenced by a magnetic field.

Another concept related to induction is self-inductance. This phenomenon occurs when a changing current in a coil induces a voltage within the same coil, opposing the change in current. Understanding these principles is essential for anyone looking to work with electronic circuits and electromagnetic devices.

Ex. 2. *Answer the questions.*

1. What is induction in physics?

2. How does mutual inductance occur?

3. Why is mutual inductance important in circuits?

4. What tool is commonly used for inductance measurement?

5. What does self-inductance refer to?

6. How does self-inductance affect the current in a coil?

7. Why is understanding induction crucial for working with electronic circuits and electromagnetic devices?

6.4. Communication

Ex. 1. *Make sentences using the following words.*

1. Electricity/flows/devices
2. Switches/control/electricity
3. Light/illuminate/room
4. Outlets/plug/devices
5. Appliances/work/homes
6. Currents/dangerous/handled
7. Conductors/pass/easily
8. Transformers/convert/voltages
9. Circuit/protect/overloads
10. Batteries/store/electronic